

GHGS

GESELLSCHAFT FÜR
HÜLSENLOSE GEWEHRSYSTEME MBH

HK HECKLER & KOCH
Dynamit Nobel

Weapon-Ammunition-System

C11
Rifle

with caseless ammunition

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G 11 – the new weapon-ammunition-system with caseless ammunition for high hit probability.

This new technology has, for the first time, provided a solution meeting the tough demands of a modern battlefield.

The G11 Rifle with caseless ammunition sets new standards

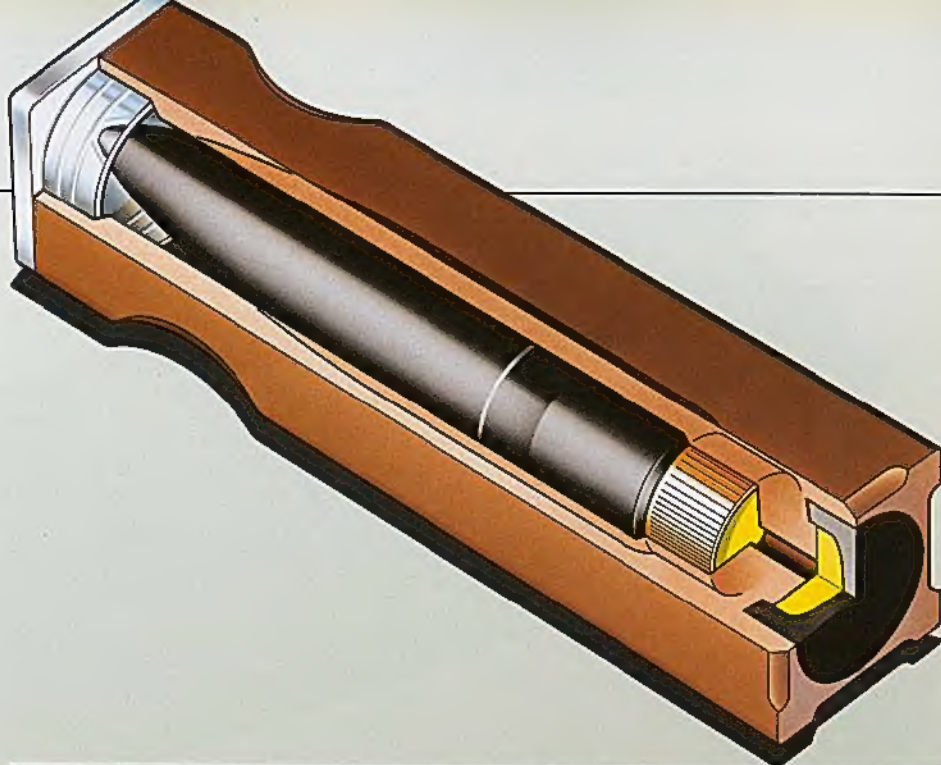
- High hit probability even under combat conditions
- Quick readiness to fire
- Maximum reliability under all environmental conditions
- No impeding recoil effect on the shooter
- Low system weight
- Compact form
- No ejected cases
 - Simple care and maintenance
 - Short training times for users
 - Small cartridge dimensions
 - Low cartridge weight
 - Large number of rounds can be carried



Dynamit Nobel

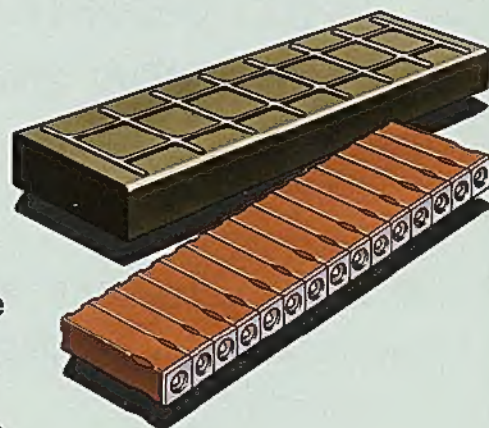
The caseless ammunition

The propellant body of the caseless round has a quadratic cross-section, thus avoiding unused space in packages and magazines. In order to achieve optimum exterior and terminal ballistic performances, the projectile combines an extremely slim ogive shape with a high sectional density. The effect on soft targets is in accordance with international conventions. Even at short ranges the round does not fragment in the soft target medium. Penetration capability through steel and concrete is comparable with conventional ammunition of larger calibre. The penetration performance against hard targets is so high that a German steel helmet (NATO test standard) is penetrated with a soft core bullet at ranges up to 600 m.



Ammunition packaging

The water-tight ammunition pack doubles as the reloading unit. These reloading units are so small that they can be stowed almost anywhere. The caseless ammunition is absolutely safe. In the absence of a case no overpressure can be generated by exposure to fire or bullet impact. The risk of cook-off is largely eliminated by the extremely high self-ignition temperature of the propellant.



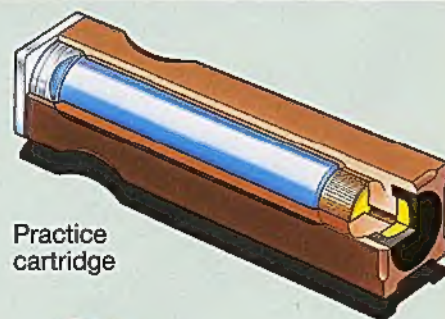
Ballistic table

Range (m) (yds.)	0	100 109.4	300 328.2	600 656.4
V approx. (m/s) (ft./sec.)	930 3051	840 2756	660 2166	450 1477
Time of flight (s)	0	0.11	0.38	0.94
Kinetic energy (J) approx. (ft.pds.)	1400 1039	1120 832	710 527	330 245
Trajectory elevation (m) (in.)	0	0.02 0.79	0.17 6.69	1.07 42.13
Crosswind drift (m) (in.)	0	0.06 2.36	0.6 23.6	2.8 110.2
Wind velocity = 10 m/s 22 mph				

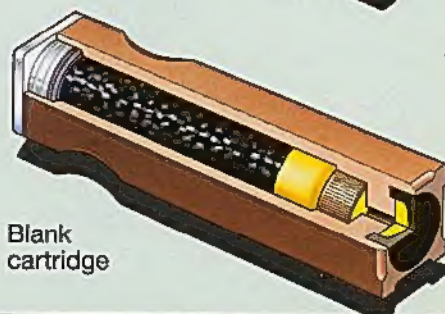
Types of ammunition

In addition to the combat cartridge with jacketed softcore bullet, the following types of ammunition are available:

- Combat cartridge with soft-core tracer bullet
- Practice cartridge with plastic training bullet and plastic training tracer bullet
- Blank cartridge
- Dummy cartridge

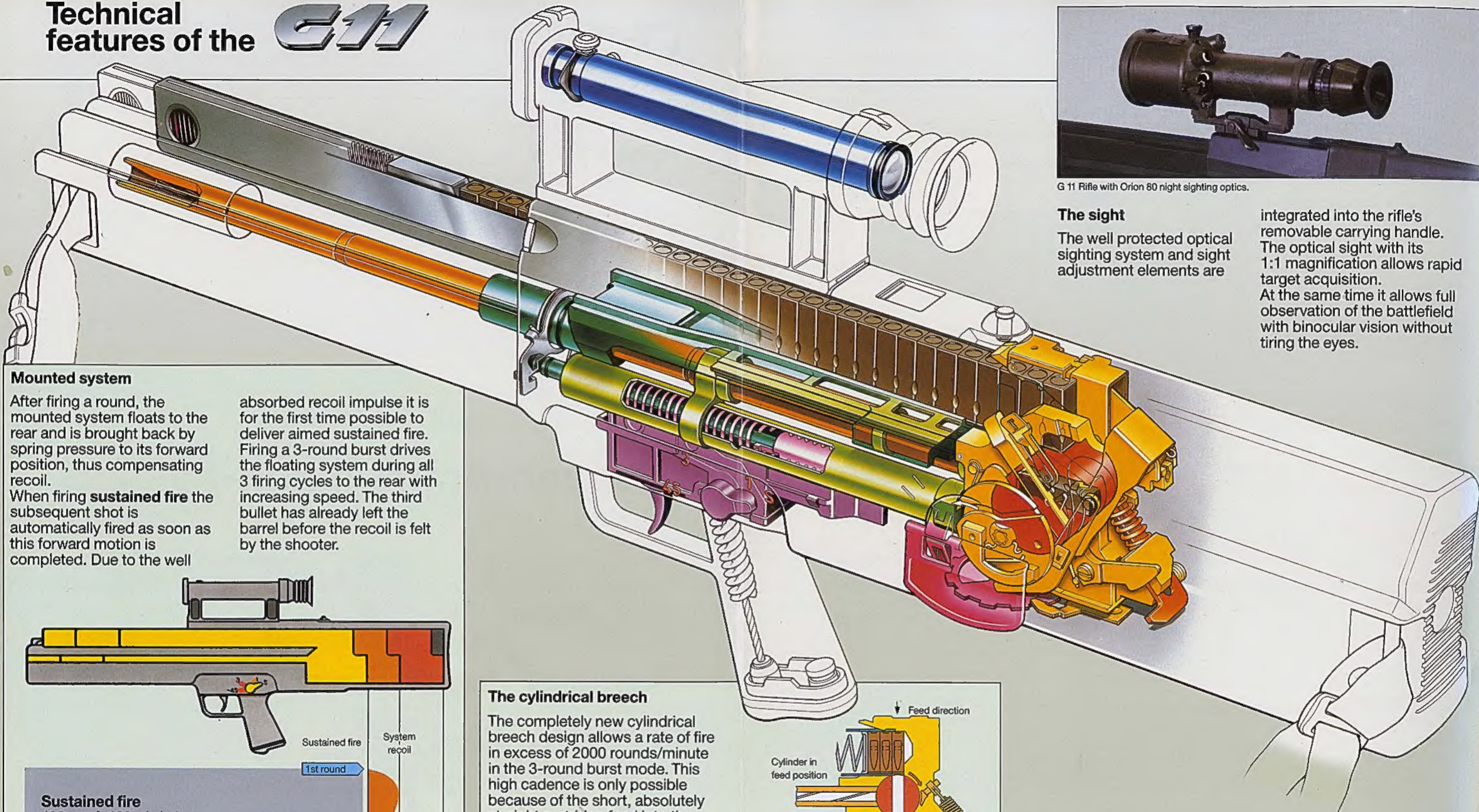


Practice cartridge



Blank cartridge

Technical features of the **G11**



G 11 Rifle with Orion 80 night sighting optics.

The sight

The well protected optical sighting system and sight adjustment elements are

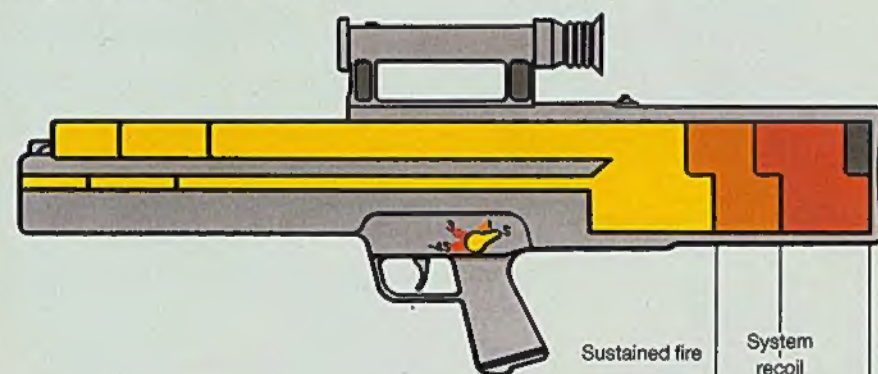
integrated into the rifle's removable carrying handle. The optical sight with its 1:1 magnification allows rapid target acquisition. At the same time it allows full observation of the battlefield with binocular vision without tiring the eyes.

Mounted system

After firing a round, the mounted system floats to the rear and is brought back by spring pressure to its forward position, thus compensating recoil.

When firing **sustained fire** the subsequent shot is automatically fired as soon as this forward motion is completed. Due to the well

absorbed recoil impulse it is for the first time possible to deliver aimed sustained fire. Firing a 3-round burst drives the floating system during all 3 firing cycles to the rear with increasing speed. The third bullet has already left the barrel before the recoil is felt by the shooter.



Sustained fire
130 ms \approx 460 rds/min

1st round

2nd round
130 ms

3-round burst

1st round

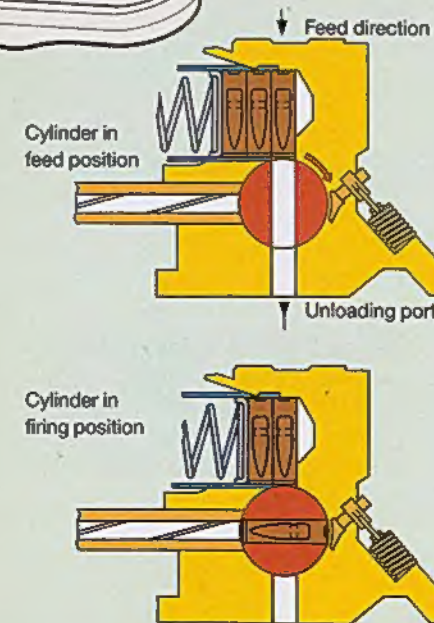
2nd round

3rd round
60 ms

3-round burst
60 ms \approx 2000 rds/min

The cylindrical breech

The completely new cylindrical breech design allows a rate of fire in excess of 2000 rounds/minute in the 3-round burst mode. This high cadence is only possible because of the short, absolutely straight cartridge feed into the vertically positioned chamber. The cylinder with the chamber carrying the cartridge is then rotated 90° into the firing position. The cartridge is mechanically ignited. The propellant gas drive rotates the cylinder back into the feeding position, the next cartridge is chambered and the cylinder tilted again into the firing position.



The receiver

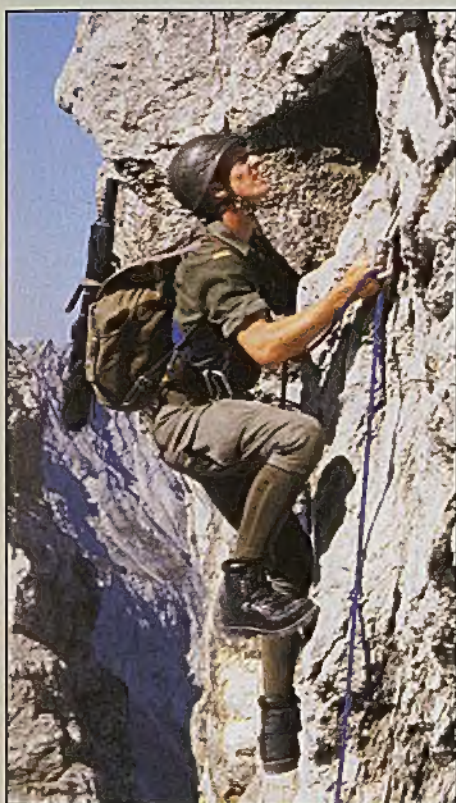
All moving parts of the G 11 are protected in a completely sealed receiver.

This not only guarantees operation under adverse conditions, but also considerably simplifies care, maintenance and logistics. The G 11 remains fully functional under all climatic and operational conditions.

All materials are chosen to resist corrosion, wear, NBC war influences as well as all kinds of chemical substances. Visible light and IR light reflection is reduced to a minimum. The smooth surface facilitates easy decontamination.



Combat analyses show that conventional rifles achieve only low hit rates. Physical fatigue, target motion, battle noises, enemy fire, etc. handicap the gunner when he tries to properly aim his rifle. The G 11 achieves its high hit probability by firing **automatically limited three-round bursts** with defined dispersion! This weapon dispersion does not depend upon the shooter or his training level.



System comparison

G 11

Calibre 4,73 mm

90

cartridges carried
in magazines
+ 28 filled reloading units



makes a total of
510 cartridges
available to the soldier

7,35 kg

16.2 lbs.

M16 A2

Calibre 5,56 mm

30

cartridges carried
in magazine
+ 7 spare magazines



makes a total of
240 cartridges
available to the soldier

7,35 kg

16.2 lbs.

G3 A3

Calibre 7,62 mm

20

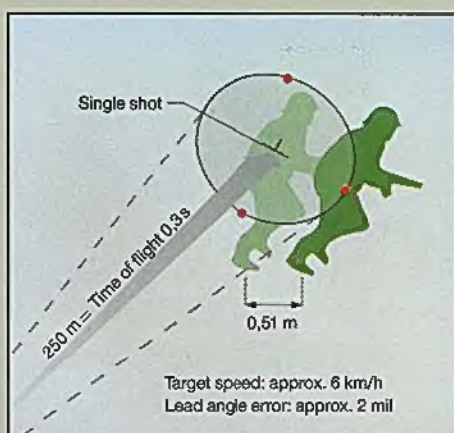
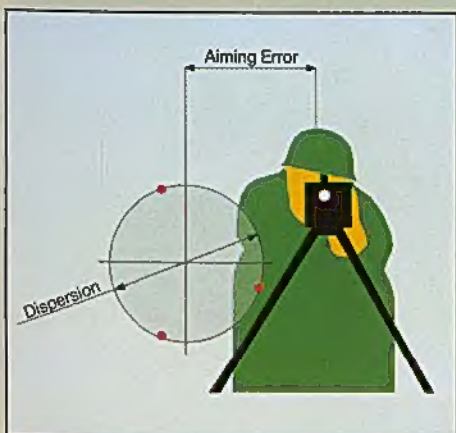
cartridges carried
in magazine
+ 4 spare magazines



makes a total of
100 cartridges
available to the soldier

7,35 kg

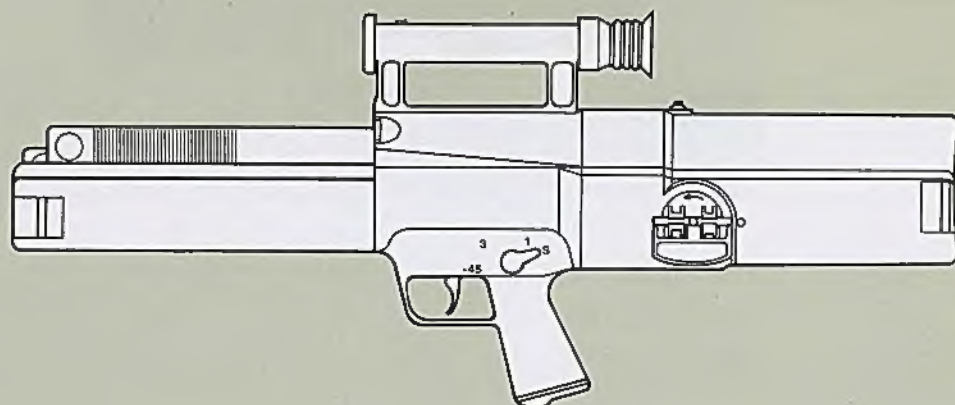
16.2 lbs.



Hit probability

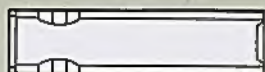
Despite aiming and lead angle errors the 3-round burst with its defined dispersion increases hit probability considerably and thus also reduces ammunition consumption.

Technical Data



Calibre	4.73 mm × 33/0.185 in.	Modes of fire:	
Type of ammunition	caseless	<ul style="list-style-type: none"> • Single fire • 3-round burst • Sustained fire 	
Length of weapon	750 mm/29.53 in.	Theoretical rates of fire:	
Width of weapon	74 mm/ 2.92 in.	<ul style="list-style-type: none"> • 3-round burst • Sustained fire 	> 2000 rounds/min. approx.
Height of weapon	295 mm/11.61 in.		450 rounds/min.
Weight of weapon with 2 magazines loaded with 90 rounds	3.8 kg/8.38 lbs. 4.3 kg/9.48 lbs.	Max. shoulder pressure:	
		<ul style="list-style-type: none"> • 3-round burst • Single and sustained fire 	approx. 160 N approx. 110 N
Weight of reloading unit including 15 rounds	0.11 kg/3.89 oz.	Magazine capacity	45 rounds
		Combat range	> 300 m /328 yds.
Barrel length, less chamber	540 mm/21.26 in.	Steel helmet penetration	up to 600 m/656 yds.
Rifling twist length (Right hand twist)	155 mm/ 6.10 in.	Operating principle	Gas-operated, cartridge in chamber
		Breech principle	Cylindrical drum

Caseless ammunition



Length	33 mm/1.29 in.	Ignition	mechanical
Cross-section	8 × 8 mm/0.32 in.	Mean gas pressure	3850 bar
Total weight	5.20 g/0.18 oz.	Muzzle velocity V_0	approx. 930 m/sec.
Projectile weight	3.25 g/0.12 oz.		3051 ft./sec.

Optical sight



Magnification	1:1
Entry pupil	10.0 mm/0.43 in.
Exit pupil	9.5 mm/0.37 in.
Pupil clearance	46.0 mm/1.81 in.
Field of view	200 mil
Eyepiece adjustment	- 6 dpt
Light transmission	> 85 %

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Subject to technical modifications